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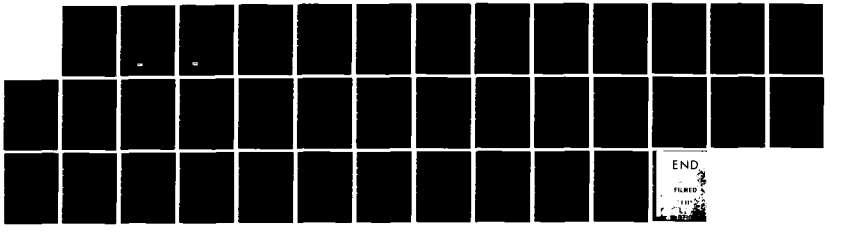

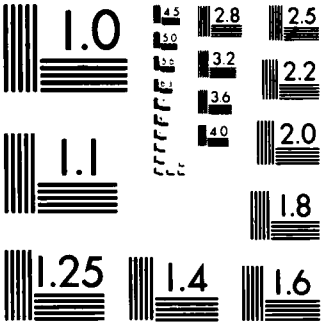

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A MINIMUM RECRUITING COST FUNCTION FOR MALE HIGH SCHOOL GRADUATES

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INTRODUCTION AND SUMMARY OF FINDINGS

In this paper we derive a cost function which specifies the minimum cost to the Navy of the recruiters and advertising necessary to attract different numbers of non-prior service male recruits who are high school graduates. This cost function is derived from a data base and a preliminary model of HSG recruit supply which were developed by Larry Goldberg at CNA for the Navy Enlisted Supply Study, [1].

The cost function can be adjusted to reflect alternative assumptions about future economic and demographic conditions. Taking advantage of this, we find that, because of increasing marginal recruiting costs, economic or demographic changes which would (with recruiting resources held constant) result in a relatively small percentage decline in the number of HSG recruits* will have a disproportinately large impact on the costs of meeting fixed recruiting goals. This may have important implications for the future of the AVF in an era of declining youth population.

* In the remainder of this paper, the term "HSG recruits" will refer to non-prior service male Navy recruits who are high school diploma or non-diploma (GED) graduates.

The estimates of current minimum recruiting costs provided by this function should also prove of value. They will be utilized in CNA's Navy Comprehensive Compensation and Supply Study - in conjunction with estimates of training costs and of the effectiveness of bonuses in stimulating reenlistments - to determine the least cost trade-off between accession and retention. In the future, along with estimates of the cost of obtaining lateral entrants or prior service males, they could be used to examine the trade-off between lateral entry and the current policy of assessing and training inexperienced recruits.

In considering this cost function, the reader should bear in mind that its focus is on the budgetary costs of recruitment. While this makes the cost function an appropriate tool for Navy decision-makers, the trade-off between compensation (whether in the form of enlistment bonuses or pay increases) and other recruiting tools would be different if weight were given to real resource costs as opposed to budgetary costs. Evidence is presented indicating that - from the perspective of society as a whole - compensation is underutilized as a recruiting tool, which recruiters and advertising are over-utilized. This is true even though we conclude that enlistment bonuses are not a cost-effective recruiting tool when viewed from the Navy's budgetary perspective. It is a problem of which the Navy and the Congress should be aware. It may be aggravated in the future as changing demographic conditions raise the budgetary costs of recruiting.

The Underlying Supply Function

Our estimate of the cost of recruiting NPS male HSGs is derived from a preliminary model of Navy recruit supply which was developed by Larry Goldberg of CNA for the Navy Enlisted Supply study. This model predicts the number of HSG contracts relative to the male population aged 17-21 in each Navy Recruiting District (HSG/POP). The equations were estimated using OLS and pooled cross section, time series data which cover each of the 43 districts in 1977, 1978, 1979.

$$1) \quad \frac{HSG}{POP} = 4.39 + 2.96\ \ell n\left(\frac{R}{POP}\right) - 4.87\ \ell n\ PAY\ RATIO + 1.82\ \ell n\left(\frac{AIRFR}{POP}\right) - .72\ \ell n\left(\frac{CC}{POP}\right) - .37\ \ell n\left(\frac{CY}{POP}\right) + .97\ \ell n\left(\frac{L}{POP}\right) + 2.36\ \ell n\ UNEMP + \mu$$

$$2) \quad \ell n\left(\frac{L}{POP}\right) = -1.97 - 1.31\ \ell n\ PAY\ RATIO + .28\ \ell n\ UNEMP + .27\ \ell n\left(\frac{CY}{POP}\right) + .094\ \ell n\left(\frac{CC}{POP}\right) + .25\ \ell n\left(\frac{TVR}{POP}\right) + .10\ \ell n\left(\frac{AD}{POP}\right) + \ell$$

Definitions of the variables and the values of the t statistics are provided in tables 1a and 1b. A reduced form equation for HSG/POP is obtained by substituting the second equation into the first. This two-equation structural model incorporates the view that advertising affects the number of contracts only through its impact on leads and that all

TABLE 1a

DEFINITION OF VARIABLES[a]

Variable	Definition
(by Navy Recruiting Districts and Year) HSG	The number of NPS male HSG Navy contracts
POP	Male population aged 17-21, in thousands
R	Navy recruiters, in man-months
PAYRATIO	Average full-time earnings of 18 year old civilian males divided by first year's regular military compensation
AIRFR	The number of Air Force recruiters (in man years)
CC	Expenditures on CETA countercyclical programs
CY	Expenditures on CETA youth programs
UNEMP	Civilian unemployment rate
L	Contacts with potential recruits obtained through advertising
TVR	Expenditures on television and radio advertising
AD	Expenditures on magazine, billboard, and direct mail advertising

[a] These data are from the data base developed by Larry Goldberg of CNA for the Navy Enlisted Supply Study.

TABLE 1b

PRELIMINARY SUPPLY MODEL
FOR NPS MALE HSG CONTRACTS[a]

Explanatory variables[b]	Equation 1 Dependent variable: HSG/POP Coefficient	(t(121))	Equation 2 Dependent variable: ℓn(L/POP) Coefficient	(t(122))	Equation 3 HSG/POP (reduced form obtained by substitution of equation 2 into equation 1)
ℓn(R/POP)	2.96	5.51			2.96
ℓn(PAYRATIO)	-4.87	-5.55	-1.31	-5.02	-6.14
ℓn(AIRFR/POP)	1.82	3.21			1.82
ℓn(CC/POP)	-.72	-2.93	.09	1.15	-.63
ℓn(CY/POP)	-.37	-.83	.27	1.91	-.11
ℓn UNEMP	2.36	6.89	.28	2.43	2.63
ℓn(L/POP)	.97	3.45			
ℓn(TVR/POP)			.25	2.16	.24
ℓn(AD/POP)			.10	2.65	.10
CONSTANT	4.39	1.68	-1.97	-2.82	2.48
R^2	.71		.43		
SEE	.91		.28		
Mean of dependent variable	6.04		2.51		

[a] These are estimates of a preliminary supply model developed by Larry Goldberg for the Navy Enlisted Supply Study.

[b] ℓn refers to the natural logarithm.

leads - regardless of source - are equally effective in generating contracts.*

Holding constant the economic and demographic variables not controlled by the Navy, the total number of HSG contracts obtained in any year is thus a function of 88 variables: the level of recruiters in each of the 43 districts, the level of printed media advertising in each district, and the level of military pay and of national advertising. As most of the national television and radio advertising is purchased through national networks - rather than being obtained via more expensive spot purchases from local stations - we assume that the Navy controls only the aggregate level of this advertising, with the distribution across districts determined by historical viewing and listening patterns.

Derivation of the Cost Function with Fixed Compensation

Fortunately, a minimum recruiting cost function for 1979 can be derived from an aggregate supply function which is based on only three variables: the aggregate number of recruiter man-months (R_T); aggregate expenditures on printed media advertising (AD_T); and the level of national advertising (TVR_T). This is because — given the functional

* In later work we modified this model, estimating the number of contracts directly as a function of the Navy advertising variables. While the coefficients of the advertising variables are sensitive to this alternative treatment, the basic form of the recruiting cost function and the major conclusions which we cite below are not affected.

form of the supply equation and given price estimates for recruiters and advertising which do not vary across districts* - equality in the ratio of prices to marginal products (a condition which holds when costs are minimized) implies that the ratio of recruiters to population and the ratio of advertising to population do not vary across districts. Multiplying each side of equation 3 on table 1a by population and aggregating across districts, we obtain the following equation:

$$HSG_T = -326719.2 + 31299.0\ell nR_T + 1057.4\ell AD_T + 2537.8\ell nTVR_T \qquad (1)$$

This is a relationship that holds when costs are minimized. The constant term incorporates the effects of the economc and demographic variables which enter into equation 3 in table 1b but which are not directly controlled by the Navy.** This constant is calculated using the 1979 value for these variables.

* The estimated annual marginal cost of a Navy recruiter in 1979 is $26,000 (see appendix A). The estimated cost per recruiter man month is thus $2,170. Each unit of advertising - printed or national - costs 1.2 1979 dollars. The figure 1.2 represents an inflation adjustment; this is necessary as the supply equations are estimated using expenditures on advertising in 1977 dollars.

** This includes military pay. Allowing the Navy to raise compensation by giving enlistment bonuses does not change the cost function (see p. 15, below).

We now equate the ratios of prices to marginal products for the aggregate recruiting variables to obtain the following relations:*

$$AD_T = 61.1 \times R_T \tag{2}$$

$$TVR_T = 152.7 \times R_T \tag{3}$$

Substituting (2) and (3) for AD_T and TVR_T in equation (1) and solving for R_T yields:

$$R_T = e^{\frac{HSG_T + 309599.7}{34894.2}} \tag{4}$$

The cost of recruiting and advertising resources is:

$$TC = 2170 \times R_T + 1.2\ AD_T + TVR_T. \tag{5}$$

Using (2) and (3) to substitute for AD_T and TVR_T in equation (5) and then substituting (4) for R_T, the final form of the minimum recruiting cost function emerges:

$$\text{Minimum Cost} = 2426.5 \times e^{\frac{HSG_T + 309599.7}{34894.2}}$$

* $\frac{31299.0}{R_T \times 2170} = \frac{1057.4}{AD_T \times 1.2} = \frac{2537.8}{TVR_T \times 1.2}$.

The Actual vs. The Optimal Allocation of Recruiters and Advertising

Table 2, which is based on this cost function, shows the minimum recruiting costs associated with different numbers of HSG contracts, together with the optimal number of recruiters and the optimal levels of advertising expenditures. The minimum expenditure necessary to obtain 58,000 recruits in 1979 was 91.2 million dollars. This includes expenditures on printed advertising of 2.8 million dollars and on national advertising of 6.8 million. 3,133 recruiters account for 90 percent of the total minimum cost. The resources actually utilized to obtain 58,000 HSG recruits in 1979 include 3,454 recruiters, 6.1 million dollars of national advertising and .9 million of printed media advertising. The estimated cost of these resources is 96.9 million. From this cost function, we conclude that recruiting resources were reasonably well allocated, although a shift away from recruiters and toward printed advertising would have saved approximately 5 million dollars.

TABLE 2

RECRUITING COST SCHEDULE BASED ON
1979 ECONOMIC AND DEMOGRAPHIC CONDITIONS

(All values in 1979 dollars)

NPS	Recruiters (in man-years)	Expenditures on printed advertising ($ millions)	Expenditures on national TV and radio ($ millions)	Total cost	Marginal cost
50,000	2,491	2.1	5.5	72.5	2,049
55,000	2,875	2.5	6.4	83.7	2,365
58,000	3,133	2.8	6.8	91.2	2,729
60,000	3,317	2.9	7.3	96.6	2,808
65,000	3,829	3.4	8.4	111.5	3,150
70,000	4,419	3.8	9.7	128.7	3,635
75,000	5,099	4.4	11.2	148.5	4,195
80,000	5,885	5.2	12.9	171.4	4,842
85,000	6,792	6.0	14.9	197.8	5,587

The Costs Associated with Changing Economic and Demographic Conditions

Table 3 shows the impact on recruiting costs of a 17 percent decline in the male population aged 17 to 21, a decline which is projected to take place by 1980. With an initial recruiting level of 60,000 for NPS male HSGs, the 17 percent population decline would result in a 5 percent drop in the number of these recruits (holding recruiting resources and the ratio of military to civilian pay constant). The increase in total cost necessary to maintain a recruiting level of 60,000 is 11 percent, however, and with a larger recruit cohort (80,000) the percentage increase in total costs necessary to offset the 17

percent population decline rises to 25 percent.* In general, since marginal costs are increasing, the percentage increase in recruiting expenditures necessary to maintain recruiting levels will be greater than the percentage decrease in recruits which would result from a demographic or economic change with recruiting resources held constant.

TABLE 3

MINIMUM RECRUITING COST SCHEDULE GIVEN A
17 PERCENT DECLINE IN THE POPULATION AGED 17-21

(Other variables held at 1979 levels)

NPS	Recruiters (in man-years)	Expenditures on printed advertising ($ millions)[a]	Expenditures on national TV and radio ($ millions)	Total cost	Marginal cost
50,000	2,608	2.3	5.8	76.0	2,490
55,000	3,100	2.8	6.8	90.3	3,064
60,000	3,684	3.2	8.0	107.3	3,641
65,000	4,378	3.8	9.6	127.5	4,327
70,000	5,203	4.6	11.4	151.5	5,143
75,000	6,184	5.4	13.6	180.1	6,112
80,000	7,350	6.5	16.2	214.0	7,264
85,000	8,734	7.7	19.2	254.3	8,632

[a]All expenditures in 1979 dollars.

Recruiting Costs with Variable Compensation

If adjustments in compensation as well as in the level of recruiters and advertising are viewed as a recruiting tool the

* This does not take into account the cost of maintaining a fixed ratio of civilian to military pay.

derivation of a recruiting cost function becomes more complex. One issue that arises is the impact of a pay increase on enlistments relative to the impact of a bonus.

Although this is an empirical question, there is little direct evidence on which to base a judgement. One frequently used indirect approach is to assume that the ratio of annual civilian to military pay in the recruit supply equation (PAYRATIO) represents the ratio of the PDV of civilian earnings relative to the PDV of military compensation over the recruits' first four-year term:

$$\text{PAYRATIO} = \text{CIVPAY} \sum_{t=0}^{3} (1+r_t)^{-t} \; / \; \text{MILPAY} \sum_{t=0}^{3} (1+r_t)^{-t},$$

where r_t is the discount rate less the rate of real wage growth. (This equality assumes that r_t for t=0,3 is the same in the military as in the civilian sector.) Under this approach, a military pay raise of $100 will have the same impact as a bonus with the same PDV $\left(100 \sum_{t=0}^{3} (1+r)^{-t}\right)$.

The problem of selecting an appropriate discount rate remains. Surveys of military personnel in which individuals are asked to choose between bonuses and pay increases indicate that first term personnel have high discount rates, with estimates ranging from 20 to 28 percent [2]. At the same time, it is conventional to assume a 10 percent discount rate for the Navy. The discrepancy between these discount rates leads to the anomalous conclusion that the Navy will meet its

recruiting goals while minimizing the PDV of compensation (using the 10 percent rate) if all compensation is given in the form of enlistment bonuses. In order to provide a more realistic problem, we will simply assume that a minimum level of pay (the actual level for 1979) is to be given and then consider the optimal enlistment bonus, if any.

Taking this approach, we find that even if recruits are assumed to have a one-year time horizon* - so that a $100 bonus has the same impact as a $100 per year pay increase - the use of a general enlistment bonus for HSGs is not cost-effective from the Navy's perspective. With a recruit cohort of 60,000 and a 1979 pay level of $7,617, the cost to the Navy of attracting an additional HSG using an enlistment bonus is approximately $7,000,** this is $4,300 above the marginal cost shown in table 2, where the recruits are attracted using advertising and recruiters. As the cohort size increases, so does the marginal cost of

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* The apparently extreme assumption may be warranted in view of a recent youth attitude survey [3] which indicates that a $1,000 increase in level of enlistment bonuses would do more to increase the attractiveness of the military than would a pay raise of $100 per month.

** When military compensation is allowed to vary and removed from the constant term, the aggregate equation for HSG's can be written:

$$HSG_T = -907021.1 + 31299.0\ \ell nR + 1057.4\ \ell nAD + 2537.8\ \ell nTVR + 64924.4\ \ell n(MILPAY).$$

Given our assumption with respect to the time horizon, the recruit is indifferent between a pay raise of $100 and a bonus of $100. MILPAY is thus equal to military pay plus the enlistment bonus. The marginal cost of a recruit attracted through an increase in MILPAY is: $\partial MILPAY/\partial HSG_T \times HSG_T = 7617/64924.4 \times HSG_T = \$7,000$ for MILPAY = $7,617 and $HSG_T = 60,000$. In order to make this marginal cost comparable to the costs shown in tables 2, 3, and 4, we do not include the cost of compensation ($7,617) paid to the additional recruit.

TABLE 4

RECRUITING COST SCHEDULE GIVEN A 17 PERCENT DECLINE IN POPULATION AND A 25 PERCENT RISE IN UNEMPLOYMENT

(Other variables held at 1979 levels)

HSG	Recruiters (in man-years)	Expenditures on printed advertising ($ millions)	Expenditures on national TV and radio ($ millions)	Total cost	Marginal cost
50,000	2,183	1.9	4.8	63.6	2,484
55,000	2,595	2.3	5.8	75.6	2,565
60,000	3,084	2.8	6.7	89.8	3,048
65,000	3,665	3.2	8.0	106.7	3,702
70,000	4,356	3.8	9.6	126.8	4,304
75,000	5,176	4.6	11.4	150.7	5,116
80,000	6,152	5.4	13.6	179.2	6,080
85,000	7,311	6.5	16.1	212.9	7,226

TABLE 5

RECRUITING COST SCHEDULE GIVEN A 17 PERCENT DECLINE IN POPULATION AND A 25 PERCENT FALL IN UNEMPLOYMENT

(Other variables at 1979 levels)

HSG	Recruiters (in man-years)	Expenditures on printed advertising ($ millions)	Expenditures on national TV and radio ($ millions)	Total cost	Marginal cost
50,000	3,281	2.9	7.2	95.5	3,242
55,000	3,899	3.5	8.5	113.5	3,853
60,000	4,634	4.1	10.2	134.9	4,581
65,000	5,507	4.8	12.1	160.4	5,442
70,000	6,545	5.8	14.4	190.6	6,468
75,000	7,778	6.8	17.0	226.5	7,687
80,000	9,244	8.2	19.2	269.2	9,135

a recruit obtained by means of a bonus. With a cohort of 80,000 and an initial military pay level of $7,617, this cost rises to $9,400. This is approximately $4,600 above the corresponding marginal cost shown in table 2. If we assume that the recruits have a 20 percent discount rate, the cost of obtaining an additional NPS male HSG recruit by the use of an enlistment bonus is approximately 3.1 times as great in each of these situations, although the cost of obtaining a recruit through the use of recruiters and advertising would be unchanged.

Even under the adverse economic and demographic conditions which are assumed in table 5, compensation is unlikely to be a cost-effective recruiting tool so long as the objective is to meet recruiting goals while minimizing the budgetary cost to the Navy. In the face of increasing civilian pay, proportional increases in military compensation will avoid recruiting shortfalls, but not in the most cost-effective manner. We conclude that allowing the Navy to give enlistment bonuses which are greater than or equal to zero does not change our cost function, as the optimal level for such a bonus is zero.

Alternative Perspectives

In the above discussion, we have been concerned only with minimizing the budgetary costs incurred by the government in recruiting different numbers of HSGs. The reader should bear in mind that this is

not always an appropriate perspective to take. This is especially true when the level of military compensation is an issue.

There are two not unrelated alternatives. The first is that - while only costs and benefits to the Navy are considered - the Navy has an interest not only in obtaining recruits, but also in the general well-being of its first term personnel. This interest may be paternalistic and/or it may arise because of a correlation between the well-being and the performance of personnel. Insofar as expenditures on compensation contribute directly to the well-being of Navy personnel while expenditures on recruiters and advertising do not, this will alter the tradeoff between compensation and other recruiting tools. Without an estimate of the value which the Navy places on the additional compensation paid to its personnel, we can conclude only that the narrow perspective adopted in our previous calculation understates the merits of compensation relative to recruiters and advertising.

A second possible perspective is to focus on the real social resource costs - and the social benefits - associated with the use of compensation as opposed to other recruiting tools. While this is not a perspective which the Navy is likely to adopt in setting enlistment bonuses, it is a perspective that Congress might wish to consider - and that the Navy might urge Congress to consider - in setting compensation levels for military personnel.

The Navy finds that enlistment bonuses are not cost-effective because the bonus must be paid to all recruits, not only to the additional recruits attracted by the bonus. The budgetary cost incurred by the Navy in attracting q_2-q_1 recruits by increasing compensation in this way is equal to the sum of areas A and B in figure 1.

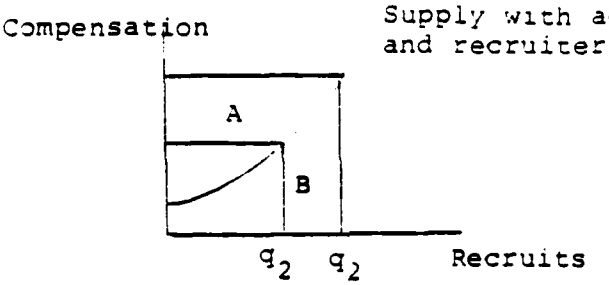

Figure 1

While area A is an expenditure from the Navy's perspective, it represents a transfer of resources from the taxpayer to the recruit rather than a real resource cost. The real resource cost is the value of the opportunities foregone when the Navy removes the q_2-q_1 individuals from the civilian sector; this is equal to area B.*

If recruiters and advertising are used to attract recruits instead of compensation, the real resource cost will include - in addition to the civilian opportunities foregone by the recruits - the value of the resources utilized in the recruiting process itself. Thus, if resource

* More exactly, area B plus the cost of the resources utilized to raise revenue equal to A+B and the welfare loss due to distortions imposed by this tax process.

transfers are viewed as costless, compensation emerges as the most cost-effective recruiting tool.*

In summary, the level of advertising, recruiting effort, and military compensation implied by the minimum recruiting cost function derived in this paper are not optimal from this social perspecive. Nonetheless, they do provide a solution to the suboptimal problem which is faced by the Navy as it seeks to maximize readiness given its budgetary constraints. It is in the context of this suboptimal problem that the recruiting cost function should be applied.

* Even if resource transfers are costly, an argument in factor of compensation remains so long as society gives at least as much weight to a dollar received by a recruit as it does to a dollar saved by a taxyayer. Richard Musgrave [4] suggests that the welfare losses due to taxation in the U.S. - together with the costs of tax administration and compliance - amount to between 4 and 5 percent of tax revenue (a marginal estimate is not available). If we assume a 20 percent discount rate for recruits, the budgetary cost of obtaining an additional recruit by means of an enlistment bonus is on the order of $21,000 ($21,000 3.1 x $7000 (see p. 15)). The social cost of this transfer is $1,050, while the marginal cost associated with the use of recruiters and advertising is approximately $2,700, or more than twice as much. Unless the last $2,700 spent on recruiters and advertising provides $1,500 worth of information, compensation is still to be preferred at the margin.

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[1] CNA, Larry Goldberg, forthcoming

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[3] Market Facts, Inc., "Attitude Tracking Survey, Spring 1980," by Public Sector Research Group, Washington, D.C.

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APPENDIX A

AN ESTIMATE OF THE MARGINAL COST OF A NAVY RECRUITER AND RECRUITER SUPPORT

SUMMARY

For fiscal year 1981, we estimate that the marginal cost to the government of an enlisted Navy recruiter, together with recruiter support, is approximately ($31,500).* There are three principal components of this cost: 1) the cost of recruiter compensation and training; 2) the cost of direct recruiter support in the form of vehicles, telephone services, and office space; 3) the cost of indirect recruiter support in the form of enlisted support pesonnel.

The first of these components is the marginal cost of a recruiter alone - holding constant vehicles, telephone services, office space and support personnel. In FY 1981, this component will amount to approximately $20,000. The second two components are not part of the strict marginal cost of a recruiter. Yet as the ratios of both direct and indirect recruiter support to recruiters have been maintained at relatively constant levels as a matter of policy, one cannot identify the marginal product of a recruiter while holding constant the absolute quantity of these other inputs. In order to have an estimate of

*In order to obtain the estimate of $26,000 for 1979, we deflated support costs by 8 percent each year and deflated compensation by 11.7 percent for 1980-81 and 7 percent for 1979-1980.

marginal cost which is consistent with the estimates of marginal products made at CNA (reference 1) and elsewhere (reference 2), we have calculated the marginal cost of a recruiter under the assumption that these ratios remain constant.

A BREAKDOWN OF THE MARGINAL COST

COMPENSATION AND TRAINING

Recruiter compensation and training account for over half of the total marginal cost. It can be broken down as follows:

Direct compensation	
Basic pay	11,600
BAQ	3,100
BAS	1,400
VHA	600
SDA	1,600
	$18,300
Indirect compensation	
Pension rights	$1,000
Training	700
Total	$20,000

In estimating the level of compensation, we assume that the recruiter is an E-6 with dependents who receives the BAQ and BAS. The expected cost of the VHA is calculated on the assumption that the proportion of recruiters receiving the VHA is the same as the overall proportion of E-6 personnel who receive that allowance. SDA refers to

special duty assignment pay; the figure shown is the average amount received by Navy recruiters.

Indirect compensation is received in the form of pension rights. The annual value of these rights is calculated by asking how much the recruiter would need to save each year during twenty years of service in order to accumulate a 30 year pension equal to 1/2 of his base pay. (He is assumed to retire as an E-7 with a base pay of $14,100 and to live for 30 years after retirement.)

$$\int_{20}^{50} 7{,}000\, e^{-rt}\, dt = \int_{0}^{20} N\, e^{-rt}\, dt$$

Solving this with an interest rate (r) of 10 percent, we find that the salary equivalent of the pension rights is approximately $1,000.

The cost of recruiter training contributes an additional $700 dollars to the annual marginal cost of a recruiter. Recruiters receive a five week training course at the beginning of their tour. School operating costs plus the recruiter's salary and a $14 per diem allowance for this period amount to approximately $2,300. (This cost estimate was provided by the comptroller at NRC.) The annual figure of $700 is calculated assuming a 10 percent interest rate and an average tour of three years.

DIRECT RECRUITER SUPPORT

The average (and marginal) annual cost of recruiter support, as estimated by the NRC Comptroller's Office for FY 1981, is approximately $6,000. It includes the following:

	Cost per enlisted recruiter
Vehicles	$2,800
Communications	1,100
Supplies	400
Printing	100
Out of pocket expenses	400
Facilities, furnishings	100
TAD	600
Other purchased services	500
Total	$6,000

An additional element in direct recruiter support, although one which does not appear in the NRC budget, is the cost of office space. There is no reliable data on this cost to the government. The comptroller at NRC suggests that an estimate of $800 per recruiter year be utilized. This is based on an allowance of 400 sq. ft. per recruiter, at $2.00 per sq. foot. This yields an over-all estimate for the cost of direct support of $6,800.

It would be possible, of course, to increase the number of recruiters without increasing expenditures on direct recruiter support, or without increasing them proportionately. Yet our estimates of the

marginal productivity of Navy recruiters reflect the existing relationships between recruiters and these elements of recruiter support. These relationships are relatively stable; the largest single component of support costs, the cost of vehicles, reflects a conscious policy which allocates seven vehicles to every ten enlisted recruiters. As a result, it is appropriate to consider not simply the marginal cost of a recruiter, but the marginal cost of a recruiter together with the cost of the direct support services which he receives.

ENLISTED SUPPORT PERSONNEL

The final cost element which we consider is the cost of the additional enlisted support personnel (principally clerical workers) associated with the marginal recruiter. Between FY 1974 and FY 1981 the ratio of enlisted support personnel to enlisted canvassers has ranged between .27 and .34, with a mean of .31. A deliberate effort is made to hold this ratio constant, both over time and between recruiting districts. As a result, existing estimates of the marginal product of a Navy recruiter include the contribution of the associated support personnel. To be consistent, the cost of the support personnel associated with a recruiter must also be included in our estimate of marginal cost.

We assume that support personnel have a pay grade of E-5 and receive the BAQ and BAS. The cost of the VHA is calculated on the

assumption that the proportion receiving this allowance is the same as the overall proportion of E-5s who receive that allowance. The value of pension rights is calculated as before. Finally, in accordance with NRC budgeting procedure, we allow for each support person 7 percent of the direct support cost allowed each recruiter.

THE MARGINAL COST OF SUPPORT PERSONNEL

Basic pay	$9,200
BAQ	2,800
BAS	1,400
VHA	500
Pension rights	1,000
Support costs	400
Total	$15,300

With the ratio of support personnel to enlisted recruiters held constant at .31, this contributes an additional $4,700 to the cost of the marginal recruiter, bringing the overall cost of the marginal recruiter to $31,500.

A POSSIBLE RANGE OF VALUES

This estimate of $31,500 is an extremely rough one. As noted above, it is an estimate of the marginal cost of a recruiter when the ratio of direct support to recruiters and the ratio of support personnel to recruiters are held constant. This approach, which is taken because estimates of the marginal product of a recruiter also hold these ratios constant, does introduce a possible bias. It may be that support

personnel are involved principally in processing applicants. If so, they may not contribute to the number of high quality applicants attracted by Navy recruiters. In this case, treating recruiters and support personnel as a unit with a single marginal product and marginal cost will lead to an upward bias in estimates of the cost of recruiting high quality individuals relative to lower quality individuals. To avoid this possibility, one might wish to assume that the marginal cost corresponding to CNAs estimate of the marginal poduct of a recruiter lies somewhere within the range from $26,800 to $31,500, where $26,800 in the cost of compensation, training, and direct recruiter support for the marginal recruiter.

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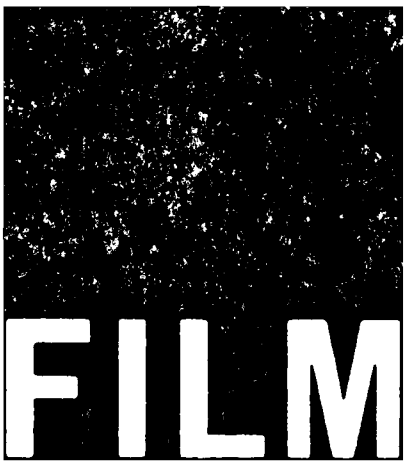
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